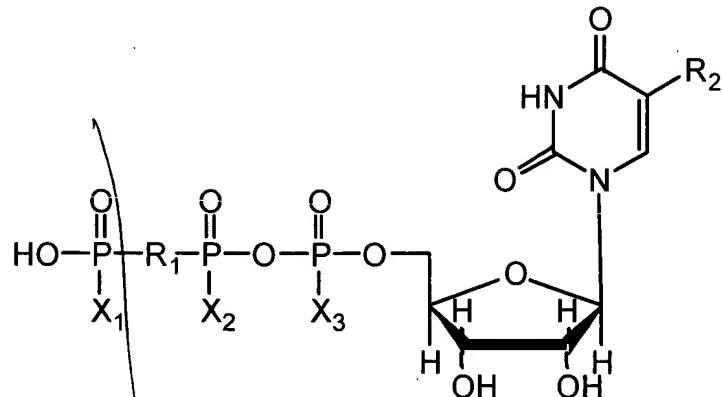


Formula I



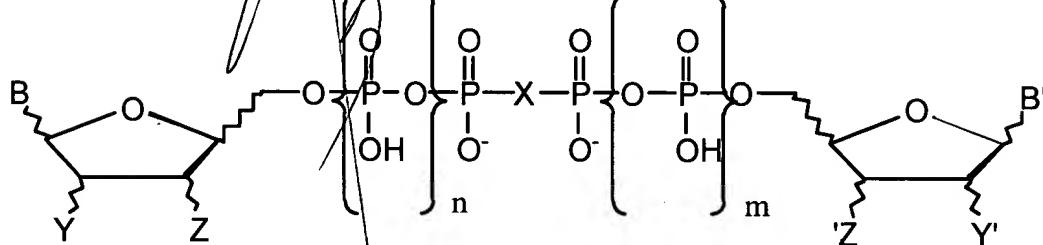
wherein:

X<sub>1</sub>, X<sub>2</sub> and X<sub>3</sub> are each independently either O<sup>-</sup> or S<sup>-</sup>;

R<sub>1</sub> is O, imido, methylene or dihalomethylene;

R<sub>2</sub> is H or Br; preferably, R<sub>2</sub> is H; or

Formula II



wherein:

X is oxygen, methylene, difluoromethylene, imido;

n = 0, 1, or 2;

m = 0, 1, or 2;

n + m = 0, 1, 2, 3, or 4; and

B and B' are each independently a purine residue or a pyrimidine residue linked through the 9- or 1- position, respectively;

Z = OH or N<sub>3</sub>;

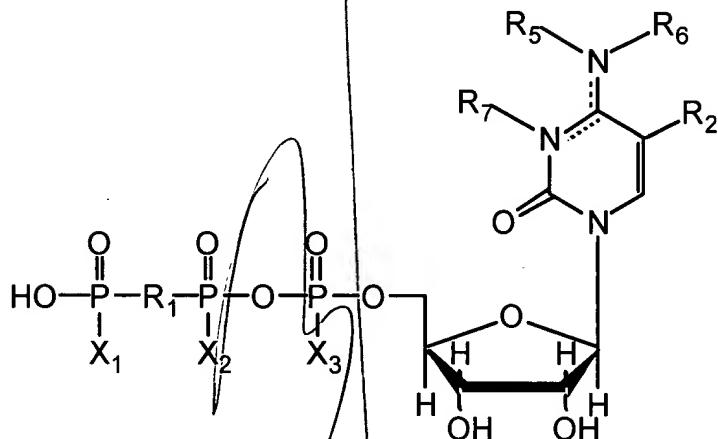
Z' = OH or N<sub>3</sub>;

Y = H or OH;

Y' = H or OH;

provided that when Z is N<sub>3</sub>, Y is H or when Z' is N<sub>3</sub>, Y' is H; or]

Formula III

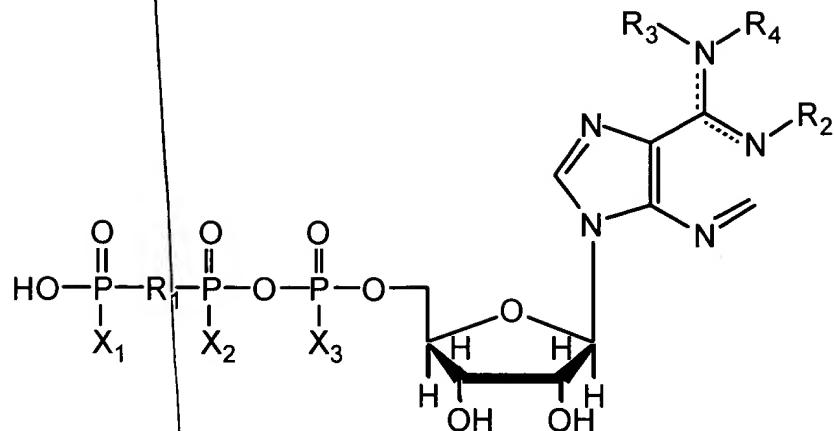


wherein:

R<sub>1</sub>, X<sub>1</sub>, X<sub>2</sub> and X<sub>3</sub> are defined as in Formula I;

R<sub>5</sub> and R<sub>6</sub> are H while R<sub>7</sub> is nothing and there is a double bond between N-3 and C-4 (cytosine), or

R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> taken together are -CH=CH-, forming a ring from N-3 to N-4 with a double bond between N-4 and C-4 (3,N<sup>4</sup>-ethenocytosine) optionally substituted at the 4- or 5-position of the etheno ring; or

Formula IV

*P/canc*  
wherein:

$\text{R}_1$ ,  $\text{X}_1$ ,  $\text{X}_2$ , and  $\text{X}_3$  are defined as in Formula I;

$\text{R}_3$  and  $\text{R}_4$  are H while  $\text{R}_2$  is nothing and there is a double bond between N-1 and C-6 (adenine), or

$\text{R}_3$  and  $\text{R}_4$  are H while  $\text{R}_2$  is O and there is a double bond between N-1 and C-6 (adenine 1-oxide), or

$\text{R}_3$ ,  $\text{R}_4$ , and  $\text{R}_2$  taken together are  $-\text{CH}=\text{CH}-$ , forming a ring from N-6 to N-1 with a double bond between N-6 and C-6 (1,N6-ethenoadenine);

or pharmaceutically acceptable esters or salts thereof.

Cancel Claims 2 and 3.

4. (Reiterated) The method of claim 1 wherein  $\text{R}_2$  of Formula I is H.

Cancel Claim 5.